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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/020,506	12/11/2001	Kalu K. Vasoya	47490/RAG/S968	8703

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EXAMINER
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XU, LING X

ART UNIT	PAPER NUMBER
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1775

DATE MAILED: 07/15/2003

11

Please find below and/or attached an Office communication concerning this application or proceeding.

AS-11

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/020,506	VASOYA ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Ling X. Xu	1775	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 16 June 2003.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 56-71 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 56-71 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                        | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>10</u> | 6) <input type="checkbox"/> Other:  |

## **DETAILED ACTION**

### ***Response to Amendment***

1. Applicant's amendments filed on 6/16/2003 have been entered. Claims 70-71 have been added. Claim 69 was objected and would be allowed if rewritten in independent form in the prior Office action. However, applicant has amended claim 69 to depend from claim 56 and broadened the scope of the claim. Accordingly, the indicated allowability of claim 69 has been withdrawn.

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 56-71 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Amended claims 56, 69 and 70 recite that at least one electrical connection exists between the carbon containing layer and the electronic device. The specification does not describe an electronic device having an electrically connection between the carbon containing layer and the electronic device. The recitation was not supported and

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described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

In addition, in claim 70, lines 8 and 10, it recites the layer of electrically conductive material is patterned with circuit traces, the electrical connection between the carbon containing layer and the electronic device includes a trace on the layer of electrically conductive material.

The recitations related to "circuit traces" and "a trace on the layer of electrically conductive material" were also not supported and described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 70 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 70, line 8 and 10, it is unclear if one of the "circuit traces" is the same as the "trace" included in the electrical connection.

It is also unclear if the layer of electrically conductive material is still electrically connected to the layer containing carbon when the layer of electrically conductive

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material is separated from the layer containing carbon by at least the layer of dielectric material.

***Claim Rejections - 35 USC § 102***

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 56-61, 64-68 and 71 are rejected under 35 U.S.C. 102(e) as being anticipated by Zweben et al. (US 4,888,247).

With respect to claims 56-58, 66 and 71, Zweben discloses a heat conducting laminate which is laminated to a printed wiring board on which were mounted the ceramic chip carriers (the "electronic device") (Col. 16, lines 10-25). The heat conducting laminate comprise at least one layer of polymer matrix composite material having low-thermal-expansion reinforcing material distributed throughout and embedded therein (Abstract).

Zweben also discloses the polymer matrix material can be formed into the laminates by using preimpregnated sheets or films of the polymer matrix material with the reinforcing material integrally incorporated or embedded therein or by using uncured layers of polymer matrix composite material with the reinforcing material. The preimpregnated sheets are made of prepregs include carbon fibers in an epoxy resin matrix system ("the carbon containing layer") (Col. 9, lines 1-40).

With respect to claims 58-59, Zweben discloses that the reinforcing material is in the form of particles including powder, and fabrics including fibers and woven fabrics

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(Col. 5, lines 30-40). The reinforcing material is also in the form of unidirectional orientation (Col. 17, lines 45-67).

With respect to claims 60-61, Zweben discloses the preimpregnated sheets of the polymer matrix material are made of prepregs include carbon fibers in an epoxy resin matrix system (Col. 9, lines 1-40). The preimpregnated sheet comprises the same components including the same resin impregnated into the carbon layer as claimed in claims 56-59, accordingly, the same laminate would also have the same properties such as electrically conductive and has a dielectric constant greater than 6.0 at 1MHz.

With respect to claim 64, Zweben discloses the reinforcing materials may include carbon, graphite, alumina, or boron nitride (Col. 10, lines 15-45).

With respect to claims 65 and 71, Zweben discloses the heat conducting laminate comprise at least one layer of metal ("the electrically conductive layer") and at least one layer of polymer matrix composite material having low-thermal-expansion reinforcing material distributed throughout and embedded therein ("the carbon containing layer") (Abstract). The metal layer and the layer of polymer matrix composite material are electrically connected since both layers are made of electrically conductive materials as stated above.

With respect to claims 67-68, Zweben also discloses the laminate comprises plurality of metal layers adjacent to each other in the laminates and a plurality of layers of polymer matrix composite material adjacent each other in the laminate (the layer contact with the metal layer functions the same as the claimed "prepregs layer")(Col. 8, lines 40-45).

Zweben discloses all the limitations of claims 57-61, 64-68 and 71.

***Claim Rejections - 35 USC § 103***

5. Claim 62 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Zweben et al for the reason of record in Paper No. 8.

6. Claim 63 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Zweben et al. in view of Durand et al. (US 5,326,636) for the reasons of record in Paper No. 8.

***Response to Arguments***

7. Applicant's arguments filed on 12/20/2000 have been fully considered but they are not persuasive.

Applicant argues that, with respect to claims 56-59 and 66-68, that Zweben does not teach a printed wiring board on which an electronic device is mounted as recited in the amended claim 56 because Zweben discloses that the particular reinforcing material much not interfere with the electrical properties or any other properties of the electronic components or other type of component.

Arguments are not commensurate in scope with the claims. Because the claims do not require the argued limitations that the particular reinforcing material to be interfere with the electrical properties or any other properties of the electronic components.

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As stated above, Zweben discloses the preimpregnated sheets of the polymer matrix material are made of preregs include carbon fibers in an epoxy resin matrix system (Col. 9, lines 1-40). The preimpregnated sheet comprises the same components including the same resin impregnated into the carbon layer as claimed in claims 56-59 and described in the specification pages 7-8, accordingly, the same laminate would also have the same properties such as electrically conductive and has a dielectric constant greater than 6.0 at 1MHz.

With respect to the argument related to claims 60-65, the USC 112(2) rejections have been withdrawn in light of applicant's amendments.

Applicant argues, with respect to claim 62, that the Zweben does not teach the limitations of the claim.

As stated above and in prior Office action, Zweben teaches all the limitations except the electrically conductive resin contains pyrolytic carbon additive.

Zweben teaches the addition of carbon and graphite in the form of particles. Carbon, Graphite, and pyrolytic carbon are similar product and have similar properties in the polymer matrix composite.

Therefore, it would have been obvious to one of ordinary skill in the art to use different carbon additives such as graphite, pyrolytic carbon in the polymer matrix composite layer because they are similar product and have similar properties in the polymer matrix composite.

With respect to claim 63, applicant argues that the Office action does not indicate the motivation to combine Zweben and Durand. The Examiner disagrees.

As stated above and in the prior Office action, Zweben discloses all the limitations except the electrically conductive resin contains a silver oxide additive.

Durand teaches the addition of conductive particle filler in the epoxy resins composite can improve long-term performance of the resins composite in high temperature and high humidity environments (Col. 6, lines 23-35). The preferred conductive particle filler is silver because its oxides are conductive in contrast to the insulating oxides of copper, nickel, tin (Col. 5, lines 50-60).

Therefore, it would have been obvious to one of ordinary skill in the art to add silver oxide in the epoxy resins of the polymer matrix composite layer in order to increase the conductivity of the epoxy resins composite and improve its long-term performance.

With respect to claims 69-70, the Examiner acknowledges that Zweben does not disclose the newly added limitations, however, these limitations, as stated above, are not supported or described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

If any of these limitations are explicitly supported by the original disclosure, applicant should indicate the page and line numbers where support is found. If support

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is considered to be implicit, applicants should clearly explain how these limitations are derived from the original disclosure. Any unsupported limitations are required to be deleted from the claims.

### ***Conclusion***

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ling X. Xu whose telephone number is 703-305-0395. The examiner can normally be reached on 8:00 - 4:30 Monday - Friday.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Deborah D. Jones can be reached on 703-308-3822. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

Ling X. Xu  
Examiner  
Art Unit 1775

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LX

July 10, 2003

  
DEBORAH JONES  
SUPERVISORY PATENT EXAMINER